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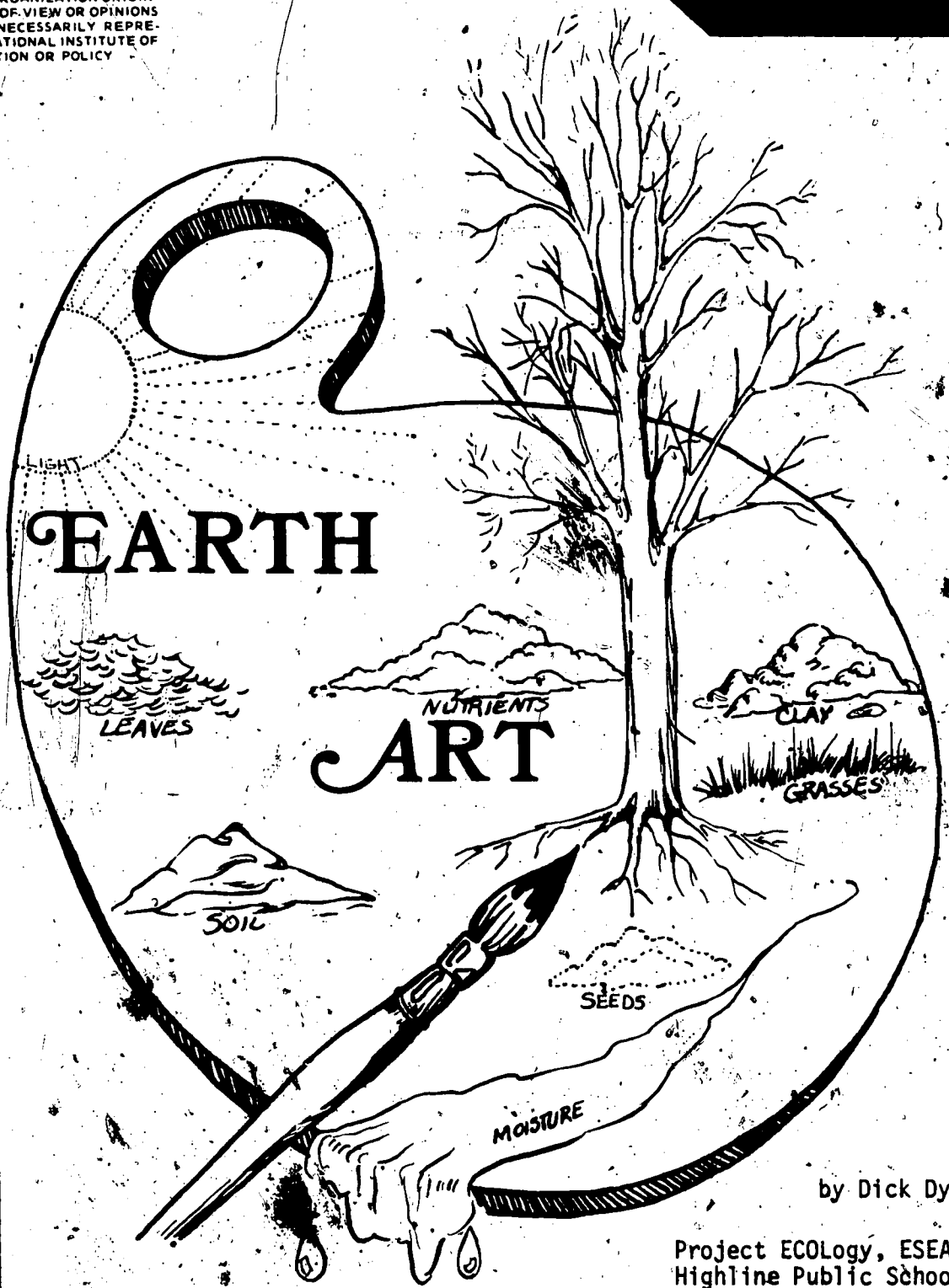
ABSTRACT

This is one of a series of units for environmental education developed by the Highline Public Schools. This unit for elementary school children is designed to help bring more art into the classroom and to help students become more aware of their environment. Included are six lessons and a bibliography of suggested student references. Each lesson outline includes the concept of the lesson, materials needed, notes to the teacher, procedure, evaluative activities, and suggestions for additional activities. The materials were tried and evaluated; evaluation data may be obtained from the Highline Public Schools. (RH)

DYE PAK



EARTH ART

by Dick Dye

An Environmental Learning Experience for 2nd-4th grade classes. One of many ELE Paks available for all areas.

Project ECOLogy, ESEA Title III
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NATURE KNOWS BEST

PROJECT ECOLOGY TITLE III

The Kids Who Participated in the Pilot Evaluation Program

Garth Crisman	Brian Setterberg	Lisa Kussman
Joe Garcia	Steven Spurlock	Cheryl Lemmon
Jeff Johnstone	Paul Staub	Marlene Macrae
Jimmy Leonard	Martin VanAntwerp	Michelle McCaslin
Allister Mackinnon	Laura Amberg	Lisa Ramage
Paul Meyer	Wendy Boutwell	Gina Soros
David Peterson	Jami Butler	Andrea Taylor
Richard Rasmussen	Rebecca Campbell	Marcy Wilcoxen
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Michael Roderick	Linda Fosberg	Paula Burch
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The Author/Teacher Who Developed This Environmental Learning Experience (ELE)

Richard Dya
Gregory Heights Elementary

Highline School District #401

Ralph Woods
Principal

Taught in the Classroom by

Wick Chambers - Student Teacher from Central Washington State College during Fall Quarter, 1974.

Evaluation Results Regarding This ELE May Be Obtained by Including This Page and a Self Addressed Stamped Envelope To

Highline Public Schools, District 401
Instructional Division
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EVERYTHING IS CONNECTED TO EVERYTHING ELSE

EVERYTHING MUST GO SOME WHERE

THERE IS NO SUCH THING AS A FREE LUNCH

PROJECT ECOLOGY TITLE III

CONCEPTUAL OVERVIEW

1. Clay, a component of soil, is useful to mankind.
2. Soil is formed by decomposition.
   Clay can be artistically used in a practical application.
3. Plants develop in different ways.
4. We appreciate the textures and patterns in our environment.
5. Grass is a versatile and useful plant.
6. Seeds travel and can be used artistically to man's advantage.
   Seeds are a universal food supply for man and some animals.

NOTES TO THE TEACHER

It is not meant for the plant cycle lessons in this unit to be used as science lessons perse, but rather that they be used as a spring board on which to base the art lessons. It is for this reason that I have purposely not gone deeply into information about the plant cycle. Therefore, each discussion session, before the art activity takes place, shouldn't last more than fifteen to thirty minutes, however some days might be spent working entirely with the science aspect of the Pak.

This unit was designed to be used in the early fall or late spring of the year for a period of four to six weeks with second to fourth grade age students. It can be adapted to most grade levels by using more sophisticated materials, and becoming more technically involved with the processes and thus spending upwards of eight weeks or more.

All of the materials that will be needed in presenting the lessons in the unit are listed in a master materials list by lessons. A suggested bibliography has been compiled separately. Also, any item that is to be on hand or prepared ahead of time is listed in the "Preliminary Procedure" list.

It is intended that this unit will bring more art into classrooms to help students and teachers become more aware and appreciative of the world around them, namely their own environment.

MATERIALS LIST BY LESSON

Lesson 1 - About 25 pounds of clay (for a class of 30)
Cutting wire, coat hanger or string
Collection of twigs, fir needles, small leaves, etc.
9 x 12 tagboard, vinyl wall paper scraps (backside) one per student
Quarter sheets of newspaper per student
Large (extra large) paper clip per student (optional)
Filmstrips: "Soil is For Growing"
"Plant Needs"

Lesson 2 - About 25 pounds of clay (for a class of 30)
Cutting wire, coat hanger or string
Collection of twigs, fir needles, small leaves, etc.
9 x 12 tagboard, vinyl wall paper scraps (backside) one per student
Filmstrip: "How Soil is Formed"

Lesson 3 - Lima beans (several)
12 x 18 white drawing paper, several per student
Water color pans - one per student or Alpha color tempera "biggies", cakes of green, yellow, and brown per four students
Brushes, #12 or #10 - one per student
Water pans for each student
One by one inch square of sponge per each student
Examples or pictures of green and non-green plants
Filmstrips: "How Plants Live"
"Parts of a Plant"

Lesson 4 - Broadline or primary crayons
12 x 18 construction paper (variety of colors, several sheets per student should be available)
Wide tip marking pen (dark color)
Several three inch wide strips of tagboard
Extra variety of leaves (for those who forget to bring theirs)
Example of a leaf rubbing (optional)
Mounted leaves
Scissors
Paste
Blue-black ink
Filmstrips: "Textures in Nature"
"Patterns in Nature"
Films: "Discovering Patterns"
"Discovering Textures"

Lesson 5 - Variety of grasses - include corn stalk, bamboo pole, stalk of sugar cane if possible
White drawing paper, 12 x 18 is best, several per student
Watercolor pans and brushes, one per student
India ink (black) and something to hold a small amount of the ink for two to four students (margarine tubs are excellent)
Pen holders and #B-6 size pen, one per student
Water pans, one per student
Several packages of natural color raffia and several cones of jute in many colors

MATERIALS LIST BY LESSON continued

Lesson 5 - An assortment of colors in various weights of yarn
(cont.) A cone of string
Several branches broken to 8-10 inch lengths, two per student
(Madrona is ideal).
Large plastic tub for soaking the raffia
Film: "At Your Finger Tips"
Book: "Green is For Growing" by Winifred and Cecil Lubell

Lesson 6 - 1-3 fir cones per student (be sure these have had time to dry out)
String
Scissors
Scraps of felt, 3 x 4 inch pieces
Pins
Patterns (dittoed) for each child
Colored toothpicks (round)
Embroidery thread, many colors
Glue
Large needle, one per student
Filmstrips: "How Seeds are Scattered"
"What Do Seeds Do?"

PRELIMINARY PROCEDURES

The following is a list of activities the teacher and the students should do well before the lessons in some cases, and other cases only the day before.

Order films three weeks before you plan to use them.
Collect as many books about plants as you can.
Check the bibliography at the end of this unit.

Lesson 1 - If it is not possible to procure prewedged clay (about $4 most places) mix your own powder clay usually found in most schools. Be sure to let it age at least a month. (To speed up the aging process add a couple of teaspoons of vinegar per batch.) Wedge the clay thoroughly. Examples of the wall pot are available at the art office. Clay can be divided up ahead of time and placed into baggies. Make up a bulletin board as described in the first lesson. See Figure 1.

Lesson 2 - Same as in lesson 1 above.

Lesson 3 - Cut into one by one inch pieces two or three large utility type sponges, enough for one per student. Place bean seeds in water to soak the day before this lesson.

Lesson 4 - Make some leaf rubbings, showing different possibilities. Mount several leaves separately on construction paper. Suggested leaves are: salal, madrona, big leaf maple, vine maple, rhododendron, sword fern, alder, oregon grape, cedar, Douglas fit, pine, bracken fern, etc.

Lesson 5 - Hunt for a sugar cane stalk, corn stalk, and a bamboo pole or branch. (This may take awhile so start early.) Collect small branches 8-10 inches.

Lesson 6 - Collect fir cones, 1-3 per student. (This also may take some time, have the students collect as many as they can several weeks before this lesson so that the cones have a chance to thoroughly dry.) Ditto off patterns.

LESSON 1

CONCEPT: Clay, a component of soil, is useful to mankind.

MATERIALS:
About 25 pounds of clay (for a class of 30)
Wire coat hanger or string for cutting the clay into portions the size of a golf ball
Collection of grasses, leaves, bark, branches, etc.
9 x 12 sheet of tagboard per student of oil cloth, (vinyl wall paper from sample books is excellent, use the reverse side of both oil cloth and vinyl paper)
Extra large size paper clip per student
Quarter sheets of newspaper per student

PROCEDURE:

1. Start with a simple bulletin board to stimulate interest. (See sample idea next page, Figure 1)

2. Write the word "soil" on the chalkboard and pose the following question and list the responses on the soil part of the above bulletin board. *What is soil?* Elicit from the students words like gravel, sand, humus, peat moss, clay, bark, bugs, dust, loam, nutrients, minerals, pebbles, mud, earth, fertilizer, etc.

3. Discuss why the above listed responses might be important to the growth of a plant. Pose questions: *What else besides good soil does a plant need? Do all plants need the same things to grow?* Example: water plants, desert plants, air plants, bog plants all have special needs.

4. Discuss uses of soil other than by plants as: sand and gravel for making concrete construction, fill dirt in making road beds, raised freeway interchanges, a child's sandbox full of sand, clay is used by potters and brick makers, sand used in castings.

5. *Think of all the things in your home that are made of clay.* List their responses on the chalkboard. Examples might be: porcelain fixtures in the bathroom, light sockets, insulators in electrical appliances, teeth, etc. (With their parents help each child could come up with a list of things that are made of clay.)

6. Discuss the properties of clay: *What can you tell me about clay?* Examples might be: Easily modeled, retains its shape, slippery or slimy when wet, bakes to a hard substance when heated above 1700 degrees in a kiln, etc.

7. Pass out the vinyl or tagboard on which to work.

8. Use the wire clothes hanger or string to cut the clay into small two by two inch squares or golf ball sizes. Each student is given two of these.

Sample Bulletin Board 40 x 40

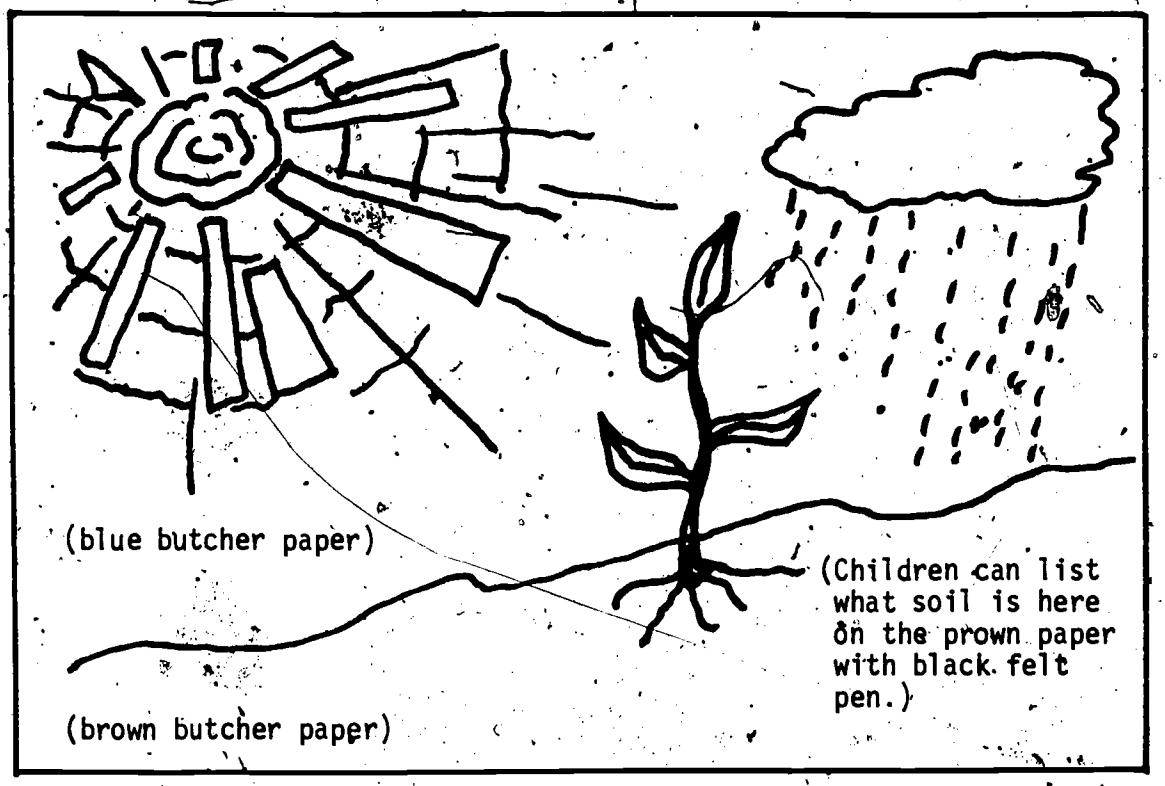


Fig. 1

This sample chart helps to show the children how the pinch pot should progress. I made mine 72 x 18.

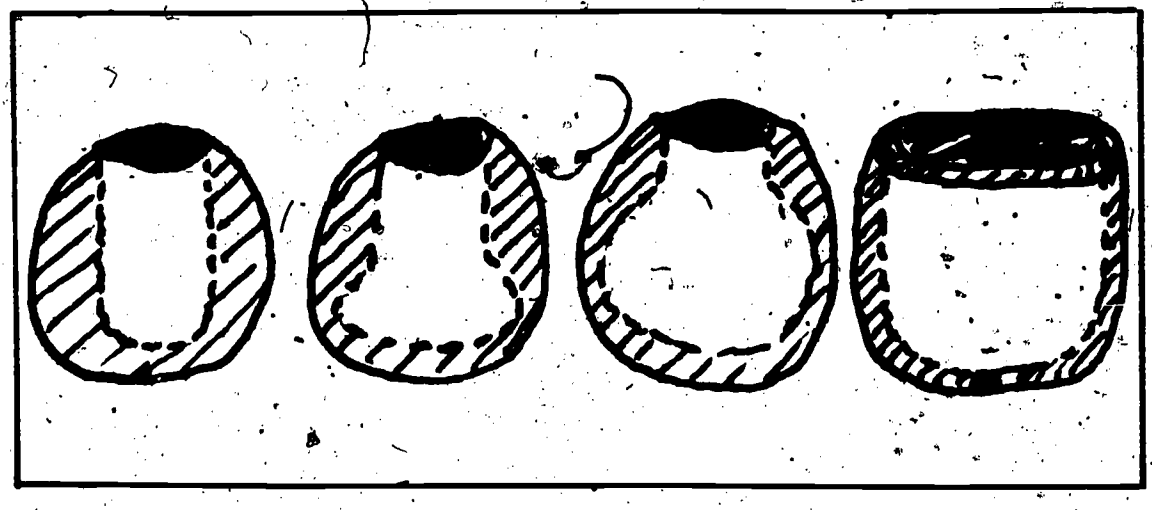


Fig. 2

The following is merely a suggestion of how to make a wall weed pot. If you find another method works better for you, feel free! If this is a first experience with clay for the children, inform them that they can not fold the clay up and start over again as this will form air pockets and cause breakage in the firing process. If possible give this student a fresh piece of clay.

9. Pound out one of the chunks of clay with the fist until it is about one half inches thick or as thick as your little finger. Try to get the slab as even thickness as possible. Be sure to use the reverse side of the vinyl paper if you are using it.

10. Cut a geometrical shape with the paper clip that has been partly straightened, or leave as a free form shape. See Figure 3.

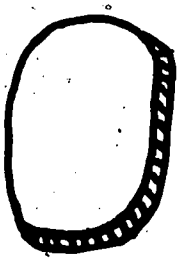


Fig. 3

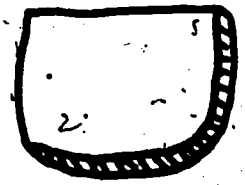


Fig. 4

11. Pound out another slab as before. You may have to trim this slab so that it is about half as long, but an inch wider than the first slab. See Figure 4 above.

12. Make a small loose wad of newspaper, and place it on the large slab just below the center.

13. Place the second slab of clay over the wad of paper so that the ends of both slabs line up. See Figure 5.

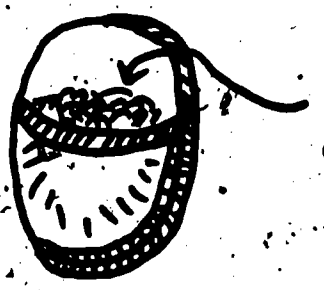


Fig. 5

14. Now pinch the bottom and sides together gently but firmly to adhere the slabs together. See Figure 6.

15. Poke a hole one half inch from the top of the first (bottom slab) that you made. Use the eraser end of a pencil for this purpose. See Figure 6.

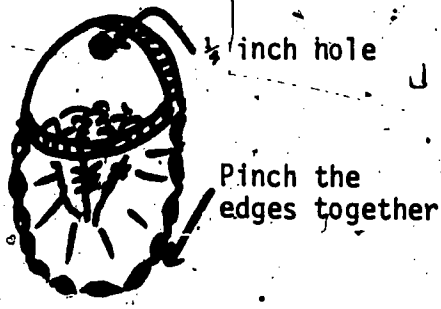


Fig. 6

Another version of this project is called a pocket pot. It is made in the same manner except both slabs are of the same size, and the holes are placed at the top on both sides. See Figure 7. A cord is later strung through the holes for hanging.

Fig. 7

16. Decorate the wall pots before the clay becomes too hard by pressing gently onto the pocket area of the pot grasses, leaves, bark, etc. (Three to five good impressions of grasses work very well!) Make sure that each art treasure is identified well.

17. Smooth out the idges, and after the clay has firmed up (about an hour) carefully remove the paper wad. Set the pots aside to dry for two weeks.

18. After the first firing, the bisque fire, decide how the wall container will be used. For a wall vase that will need to hold water, the inside should be glazed well. If the container is used as a growing pot for ivy or cactus or other small plants, the inside should definitely not be glazed. As a weed pot, neither the inside or the outside need glazing, instead paint it with acrylics.

EVALUATIVE ACTIVITIES:

1. After clean-up discuss with the students reactions in working with clay: feelings, likes, dislikes, easy, hard (why) etc.

2. Discuss how a plant might grow in clay, what else would it need? Example: water lilies thrive in a clay soil, but need nutrients (fertilizer)

3. Discuss: "What is dirt?"

ADDITIONAL ACTIVITIES:

1. Show filmstrips: "Soil is for Growing"
"Plant Needs"
Follow each filmstrip with a discussion. (This may take two different class periods).

2. A fun activity that the children will really enjoy follows. You will need a spot in your room as large as a library table where this activity will be undisturbed.

   a. The day before this activity is to take place do the following: Collect enough milk cartons (one per student) or peat pots (available from Science Supplies if you teach in Highline), five pounds of sand or a number 12 bag two thirds full, one

pound of peat moss or a number 12 bag half full, three pounds of powdered clay (greenstrip) #12 bag one fourth full, three pounds of humus of #12 bag half full, spoons (enough for one per student).

b. Put a few samples of each soil in separate containers, (I used margarine tubs), and pass these around the class. Start with one kind only. For example start with sand. Write the word sand on the chalkboard. List their reactions. What can they tell you about it, etc. Do this in turn with each type of soil.

c. Have a place where all types of soil can be felt and compared. Select four or five students to go there and give their comparisons, reactions of the different soil types.

d. Divide the class into four groups. Each group prepares a pot with one of the special soils -- group one might use sand only, group two peat moss only, etc. Remember to fill the containers only half full. Each group is color coded for easy ID on chart.

e. After all groups have their containers ready, divide the humus group in half - one half will try growing their plants in total darkness, the other in full light.

f. Before passing out the beans to be planted discuss how to carry out an experiment, keeping things you do the same, recording your findings. Pass out the beans, plant four to each carton or pot. (Later they will remove the weakest three and let the strong plant continue to grow).

g. Measure out the same amount of water for each carton or pot on the first watering. *What happens in each soil type?*

h. Keep records as: Which has to be watered first, which stays wet the longest, which sprouts first, why did some wither after looking so healthy, coloring, etc.

i. After plants form second set of leaves, thin to one plant per pot. *Why?*

j. Discuss the part that light plays in the growth of plants.

See suggested chart for this activity on the next page.

*** Reminder for Lesson 2 ***

Cut up clay into 3 x 3 chunks (2 x 2 if you have more than 30 students) place into baggies the night before.

PLANT AND SOIL RECORD

Here is a suggested chart on which to keep your findings about the growth of the plants, when you had to water, when the first sprout appeared, color, rate of growth (heighth in so many days), healthiness continued or waned and why, etc.

	WHAT WE OBSERVED				
Recorder	1st week	2nd week	3rd week	4th week	5th week
CLAY					
SAND					
HUMUS					
PEAT MOSS					

Fig. 9

LESSON 2

CONCEPT: Soil is formed by decomposition.
Clay can be artistically used in a practical application.

MATERIALS: About [illegible] pounds of clay (for a class of 30)
Cutting wire, coat hanger or string
Collection of twigs, fir needles, small leaves, etc.
9 x 12 tagboard, vinyl wall paper scraps (backside) one per student
Filmstrip: "How Soil is Formed"

PROCEDURE:

1. Write the words "decompose" and "decomposition" on the chalkboard. Discuss the meaning. Discuss and list things that don't decay readily.

2. Post the question: *How is soil made?*
Elicit from the students things like: decayed plants, dead animals, wind and water erosion of rocks, etc.

3. Show filmstrip "How Soil is Formed" and discuss.

The following "How to make a pinch pot" is merely a suggestion. If you find that another method works better for you, feel free! A large wall chart of how a pinch pot should progress is helpful but not necessary. See Figure 2.

4. Explain procedure #5 through #13 without their having any clay. Pass around a few pinch pot examples. Pass out other materials at this time - the 3 x 3 squares of clay previously put into baggies, and the work surfaces such as tagboard.

5. Roll the chunk of clay into a round ball.

6. With the clay in one hand, place the thumb of your other hand lightly onto the center of the clay ball and press gently as you rotate the clay. Caution: do not press too hard too quickly each time as you will eventually cause the clay to form cracks.

7. Continue the downward pressing motion until you begin to feel the pressure of your thumb through the clay on your palm. This will take awhile if done carefully. At this point the clay should be about one half to one quarter inches thick. See Fig. 10

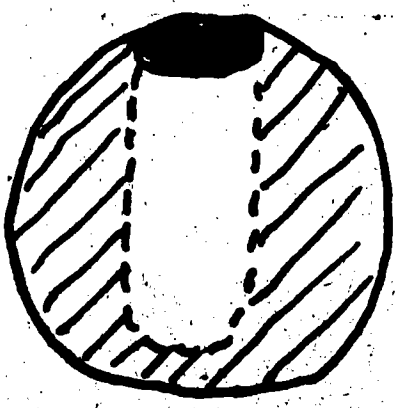


Fig. 10

8. Begin to use a pinching motion between the thumb and first two fingers of the same hand. This should increase the size of the base of the hole only. See Fig. 11. Remember, do not try to get the right thickness all in one pinch, rather many gentle pinches. Turn the ball of clay a mere eighth of an inch each time you pinch. Try to pinch the same way each time otherwise you may loose control of your shape. Keep pinching at the base and turning slowly until you have a shape that "feels" like Figure 11.

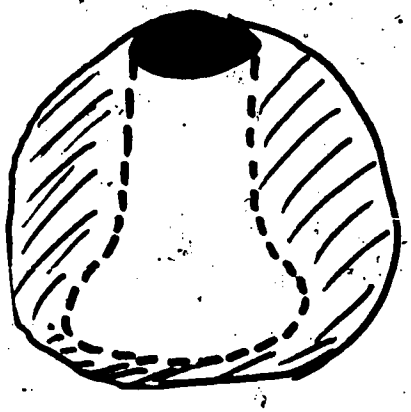


Fig. 11

9. When you are satisfied with the thickness of the wall at the base of your clay ball, begin to move upward just slightly and continue around and around at the same level several times before moving upward. See Fig. 12

10. Work the pot pressing and turning until the walls are of uniform thickness. The walls should be about one fourth inches thick. See Fig. 13

11. After the walls are of the desired thickness the base should be shaped. The pot at this point will probably have a somewhat rounded base. Tap the pot gently on its base for a non-tipping pot.

12. Put a small hole of about one quarter of an inch in the center of the bottom of the pot (pencil size) for a drainage hole. (See Fig. 13)

13. Apply a decoration with fingers or any found tool. Identify the owner with their initials on the bottom.

14. Set aside to dry for two weeks before firing.

15. Because these pots will be used in a culminating activity at the end of the unit, do not paint or glaze the inside of the pots. Glaze the outside or paint with acrylics.

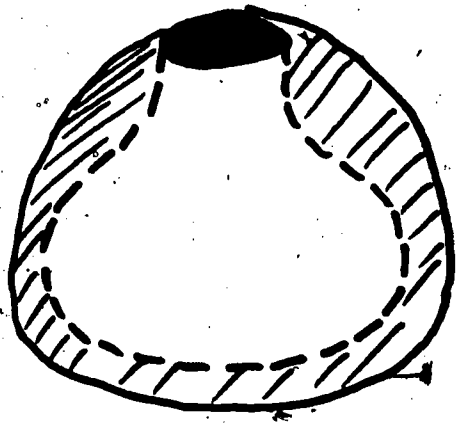


Fig. 12

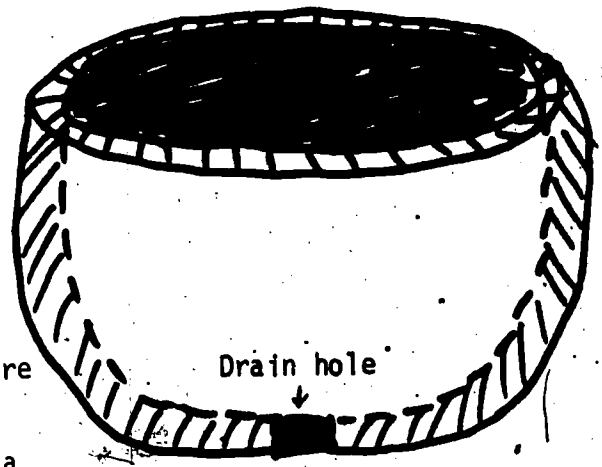


Fig. 13

EVALUATIVE ACTIVITIES:

1. Have the class observe what each other made by having them walk about the room. Notice: differences, likenesses, sizes, etc.
2. Discuss any problems with forming the pots. How do they feel about their creations? Why?
3. Review why there is a need to go slowly in forming the pinch pot. What problems might arise if one rushes to finish?
4. What about people that do this type of work for a living? What other jobs might involve working with clay? (recall from first discussion clay products - lesson one, item #5)
5. After pots are finished (about 2 weeks from now) bring a small plant from home or purchase one and plant in your pot to enjoy the rest of the year at your own desk. Remember to set potted plant on a plastic lid because this type of clay is not water tight.

ADDITIONAL ACTIVITIES:

1. Make some pinch pots. Turn them upside down and make an animal or creature out of it by adding ears, wings, feet, mouth, etc.
2. Start a collection of clay made objects (not pots or sculptures) and label as to job title of the maker. If you can't get the real thing draw a picture of it or cut it out of a magazine. Don't forget porcelain is clay too.
3. Start a compost pile with things that are only plants. (You may have to layer it every two inches with an inch of soil.)
4. Start a chart of things the children see as litter and group them according to things that might decompose and things that probably won't decompose.

*** REMINDERS FOR LESSON 3 ***

1. Cut up the sponges
2. Place the beans to soak the day before lesson 3.

LESSON 3

CONCEPT: Plants develop in different ways.

MATERIALS:
pan of watercolors, one per student or one cake of green, brown, and yellow tempera "biggies" (Alpha colors) per group of four
water pans, one for every two students
#10 or #12 watercolor brush, one per student
12 x 18 white drawing paper, several per student available
small pieces of sponge (1 x 1 inch suggested), one per student
several lima beans (dried), one per student at least
water container for the beans to soak
scissors and paste for each student
examples or pictures of green and not green plants

PROCEDURE:

1. Pose the questions:
   How does a plant grow?
   Do all plants grow from seeds? If not, *how? what?*
   Elicit from the students that some plants grow from seeds, from bulb, tuber, corm, stem cutting, leaf cutting, runners above the ground, runners below the ground, division, also some grow for only one year, some many years, some grow only in water, air, etc.

2. Look for examples in books on the above.

3. Pose the questions:
   What are the main parts of a plant? (root, stem, leaves, flowers, seed)
   What do you suppose is the job of each part of the plant?
   (Seed stores food and nourishment, roots gather moisture and nutrients from the soil, stem carries moisture and food to other parts of the plant, leaves manufacture food called chlorophyll, flowers attract insects to pollenate and produce a seed, seed reproduces a like plant.) If students do not have any of this knowledge it might be another good time to look at the books.

4. For older students you might ask:
   How do plants manufacture their own food?
   For younger students you might just mention that green plants are able to manufacture their own food in the leaves through a process called photosynthesis, using a light source -- the sun, grow light, etc.

5. For older students you might ask:
   How do non green plants get their food?
   For the younger students you might again just mention that non green plants such as mushrooms, fungus, lichens, etc. must get their food from other green plants.

6. Show the filmstrips: "How Plants Live" and "Parts of a Plant".
   Discuss each filmstrip separately.
   Then compare the information of each filmstrip.

7. Discuss and examine the soaked seeds. Note the outer covering, the tiny plant inside with leaf and root attached to the seed, stored food supply (the seed).

Use the inquiry method with the above:
What can you tell me?
What do you see?
Why do you suppose?
What else can you find?

8. Examine the growth of a tree step by step.
   a. Draw a line horizontally (the ground).
   b. Place a dot a few inches below the line (the seed).
   c. Draw a short line downward from the seed (the root).
   d. Draw a short line upward and a few inches past the horizontal ground line (a sprout). See Figure 14.

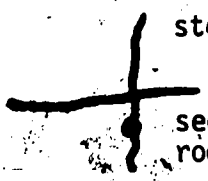


Fig. 14

Fig. 15

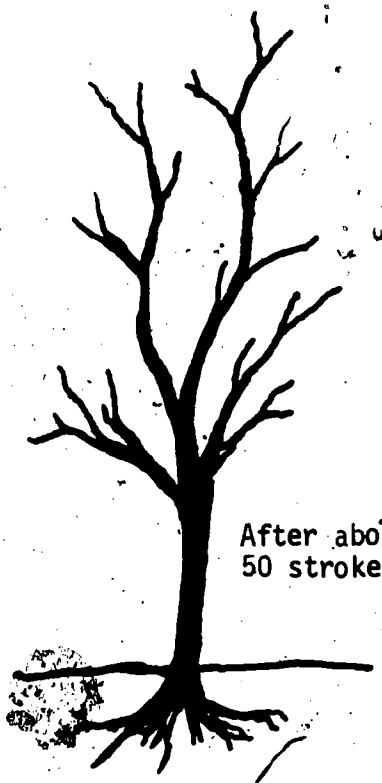


Fig. 16

As the above is taking place, ask questions as to what they think is happening.

9. Now continue drawing in this manner. Starting at the seed each time, retrace your previous line upward to downward but extend it. The downward lines should be kept to a minimum. Concentrate on the upward lines. Sometimes let your retraced line end in a branching effect from the main stem. Each successive stroke advances farther up and out from the ground, either extending the main trunk, a main branch, or making a new branch from an existing branch. See figures 14 through 16 above. By now you should have the beginnings of a tree on the chalkboard. (Be sure to practice this a few times before presenting to the students.)

10. Pass out watercolors, water pans, brushes and paper.

11. Place a few drops of water in each color.

12. Starting with brown loaded on your brush repeat the steps in drawing a tree as in number 8 and 9 on previous page. (If you do not have brown, mix orange and blue.)

13. In order to let the paint dry in readiness for the leaves this is a good time to discuss the shapes of other trees. All trees do not look alike. Pose the question: *What other shapes of trees are there?* Trees that point upward with a fat trunk and skinny limbs like fir, pine; trees with drooping tops like hemlock; trees with swaying and drooping down-to-the-ground limbs like weeping willow. Point out that they have just learned how to draw one kind of tree and that this was only one way (a rather mechanical way too, I might add, but it works.)

14. After the paint has dried you are now ready to stiple on the green leaves. (Note the trees that are growing several blocks away from your school. Point out to the students that it is the mass of green that you see on the trees and not individual leaves. Although you know that the individual leaves are there, you don't have to draw them. It is for this reason that you will be using the sponge to lightly stiple on green color to give the impression of leaves.)
    a. Dip your sponge into the water and squeeze out the excess then dab your sponge into the desired paint.
    b. You will want different shades of green so start with a light green and end up with dark green for shadows.
    c. Press the sponge lightly on the paper at the ends of the branches. (If you press too hard you will loose the sponge pattern.)
    d. Most of your small branches end at the perimeter of the tree, and this will be where most of the sponging will take place however, you might have some small branches near the trunk and low too, so don't forget these.
    e. Just remember don't stiple the whole tree and you needn't cover all of the white showing through the leaves either. Let some branches show and let some of your white paper show through the leaves.

VALUATIVE CTIVITY:

1. Pin up the collection of paintings and enjoy. A good thing to discuss after any art project that is displayed is: *What do you like best about this one? Why?* or *notice the way*...etc.

2. Review the parts of a plant and what they do for the plant.

ADDITIONAL ACTIVITIES:

1. Create a whole forest of trees for a super wall covering. Repeat steps 8 through 14 with groups of 4-5 students. Work on large strips of butcher paper 5 to 8 feet long.

2. A classification activity. Collect several old Sunset, House and Garden, etc. and have the students find examples of plants that start or could start from the way mentioned in item number one at the beginning of this lesson. Cut out the examples and paste on construction paper. Place headings on the bulletin board and see if the students can put their pictures in the proper place; that is seed, bulb, cutting, etc.

*** REMINDERS OF THINGS TO DO BEFORE YOU START ON LESSON NUMBER 4 ***

1. Make some rubbings.
2. Mount some leaves.
3. Have extra leaves on hand.

LESSON 4

CONCEPT: We appreciate the textures and patterns in our environment.

MATERIALS:
Broadline or primary crayons with wrappers removed
Scissors and paste
Several varieties of leaves, mounted separately works nicely
Several 12 x 18 sheets of white drawing paper and various colors of construction paper per child
Wide tip marking pen
Several three inch wide strips of tagboard
Example of a rubbing
Blue-black ink
Filmstrips: "Textures in Nature"
"Patterns in Nature"
Films: "Discovering Textures"
"Discovering Patterns"

PROCEDURE:

1. Have ready a display of mounted leaves. Have ready many leaves for those who forgot to bring theirs. Have the words "Texture" and "Pattern" written on the chalkboard.

2. Pose the question: *What is texture?* Record their answers. (Texture is a surface quality, a tactile experience.), Have them touch their heads and feel the texture of hair, feel the surface quality of their desks, of their clothing, etc.

3. Pose the question: *What is pattern?* Record their answers. (Pattern is a picture or impression of the surface quality, a drawn design of the texture, a visual experience.) Look for patterns within the room, clothing designs, wood grains, the windows, ceiling tiles, floor tiles, uneven and even patterns.

4. Now hold simple discussion about the leaves that were brought. Elicit from the students words like "shiny, dull, pointed, sharp, hard, soft, large, etc." Relate the Pattern and Texture discussion to the leaves. List all of the responses on the chalkboard.

5. Identify any leaves that the students know by name and write them on the three inch wide tagboard strips. List anything else known about the leaves on the board: food factories, chlorophyll, light makes them green, etc.

6. Classify the leaves into groups. Let the students decide what the classifications should be. Note that some leaves fit into many classifications. *Why?*

7. Students might match their leaves with the mounted ones for identification.

8. Have students carefully feel the surface of their leaves. Note both sides, the veins, the curl, differences of both sides, likenesses, etc. Discuss their discoveries as this is being done and record the responses on the board.

9. Hold up your example of a rubbing. See what they can tell you about it. Let them try a leaf rubbing.

10. Spread out leaves on the table. Lay rubbing paper on top. (White drawing and/or colored construction paper). Rub across paper pressing firmly with the crayon. Use several colors, some on top of others, some by themselves, etc. Lift and move paper slightly now and then, rub again. Make some single impressions. Use a blue-black ink wash over the top. (2 parts ink and one part water) Cut some leaf rubbings from one rubbing (the single impressions) and glue to another rubbing.

11. Experimentation is best but some may need to be told what to do to get more interesting effects. Try some rubbings on colored construction paper. Be sure to supply enough paper so that the students can make more than one example.

EVALUATIVE ACTIVITIES:

1. Collect compositions with names on the back sides and display, asking students to react as to colors, image placement, repeats of image, best liked and why, etc.

2. Discuss what they found out about leaves, rubbings, texture, patterns, evergreen, deciduous, etc.

ADDITIONAL ACTIVITIES:

1. Explain difference between evergreen and deciduous. Have students generalize about this.

2. Classify leaves under the headings evergreen and deciduous.

3. Show filmstrips "Textures in Nature" and "Patterns in Nature." Discuss filmstrips.

4. Show the film "Discovering Textures".

5. Take a walking field trip around the school. Take some rubbing materials with you. Wrap a piece of paper around a tree trunk and take a bark rubbing. Find different types of trees and do this. Compare the qualities of each. Bring the rubbings back to the room and put an ink wash on them.

6. Show the film "Discovering Patterns".

** REMINDERS FOR LESSON 5 **

1. Hunt up some corn stalks, sugar cane stalks, and a branch of bamboo or pole.
2. Collect small branches, two per student, 8-10 inches long. (Madrona is excellent)

LESSON 5

CONCEPT: Grass is a versatile and useful plant.

MATERIALS:
Variety of grasses - include corn stalk, bamboo pole, stalk of sugar cane if possible.
White drawing paper 12 x 18 is best, several per student
Watercolor pans and brushes, one per student
India ink (black) and something to hold a small amount of the ink for two to four students (margarine tubs are excellent)
Pen holders and #B-6 size pen, one per student
Water pans, one per student
One or two large utility sponges
Several packages of natural color raffia
Several cones of jute in many colors
An assortment of colors in various weights of yarn
A cone of string
Several branches broken to 8-10 inch lengths, two per student (Madrona is ideal)
Large plastic tub for soaking the raffia
Film: "At Your Finger Tips"
Book: "Green is For Growing" by Winifred and Cecil Lubell

PROCEDURE:

1. Pose the questions: *What is grass? How can we tell a grass from another plant? What do you know about grasses? How are grasses used? What can grasses do for us?* (A grass has a segmented stem. The base of each leaf wraps around the stem. The leaves alternate along the stem.)

2. Pass around examples of grasses: bamboo, corn, sugar cane, rice, wheat, oats, wild grasses, etc. Continue the above discussion about grasses. Outcomes might be:

   a. Grasses are world wide, they grow everywhere. *Where don't they grow?*
   b. Grasses feed the world - rice, wheat, oats, etc. *What cereals do you eat?* List some trade names under headings "Made from a grass", "Not made from a grass".
   c. Grasses as bamboo are used for construction in some parts of the world for fences, screens, even houses - some timber bamboo gets to be 40 to 60 feet tall and eight inches in diameter.
   d. Grasses are used for root coverings, floor coverings, and wall coverings, as woven mats, thatching, etc.
   e. Grasses are woven into useful objects as clothing, furniture, toys, etc.
   f. Grasses are used as an art and craft form.

3. Read, if possible, from the book, "Green is for Growing" by Winifred and Cecil Lubell, page 32-35. Enjoy!

4. Try weaving grasses!
   a. Begin by tying a branch to the back of a chair. See Fig. 17.
   b. Tie on raffia, jute or string to the branch every half inch or so. These will become the warp of the loom or the part on which you weave. If you are using raffia it is advisable to let it soak for an hour before tying it on, otherwise it may break on you. The length of each string should be as long as you want the weaving to be plus a few more inches you use up in tying around the two branches. See Fig. 18.
   c. After all of the warp threads have been attached to the top branch then attach the bottom branch in the same manner. Try to get all of the warp threads the same tension.
   d. With your collected materials begin to weave your composition, over, under, over, under, etc. It is a good idea to weave a few times back and forth with yarn or jute after weaving in an object such as a heavy stick or piece of bark. Raffia can also be used for the weaving as well as for the warp threads. It will be easier if the weaving is begun at the bottom of the warp, however it can be started at the top.
   e. After the weaving has progressed for as long as wanted, remove the loom and display the loom and weaving together as one composition of wall hanging. REMEMBER DO NOT REMOVE THE BRANCHES FROM THE WEAVING AS YOUR EFFORTS MAY JUST FALL APART.

Fig. 17

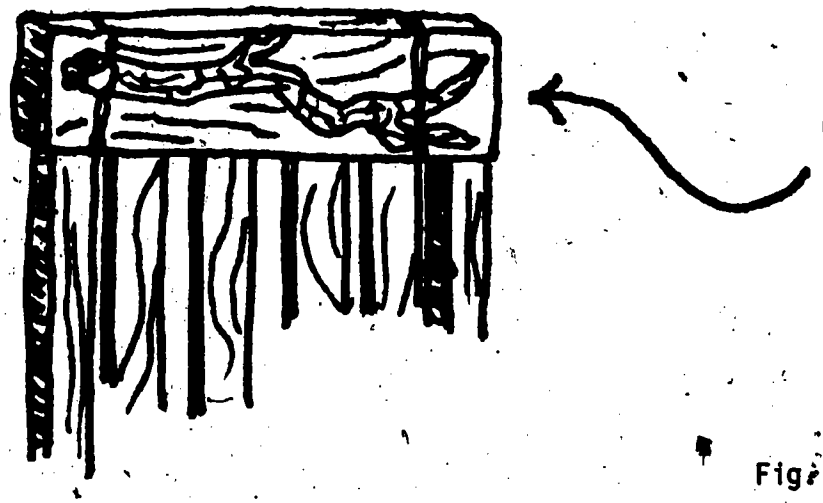


Fig. 18

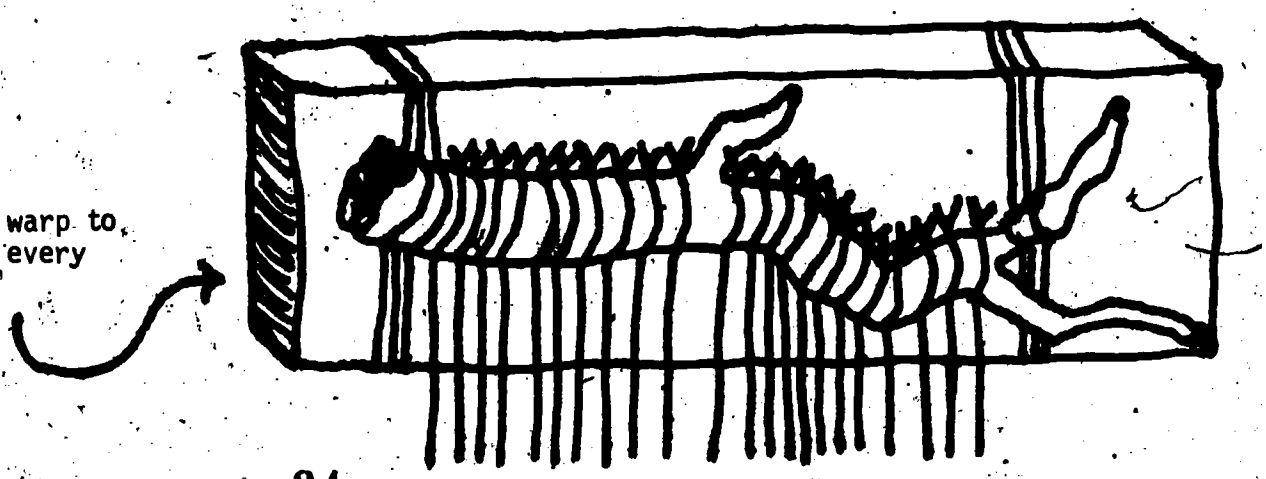
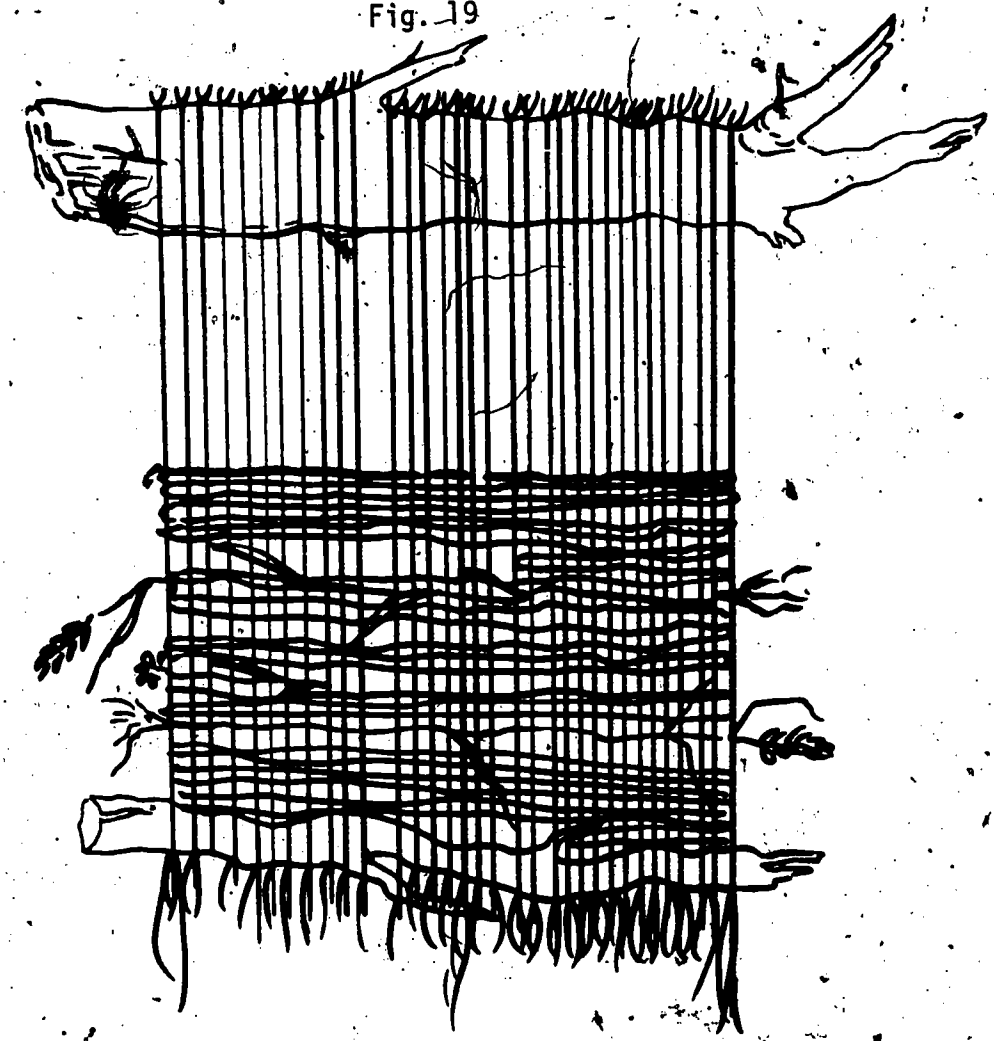


Fig. 19



f. When weaving in dried grasses, let the ends stick out. Try putting in some other types of dried flowers or weeds. Notice how the flower head sticks out in Figure 19.

g. Try to keep from pulling in on the sides of your weaving, instead "lay the weave in". As you pull the thread through the warp hold on to the other side so that your warp does not become misshapen.

5. An alternative weaving loom could be made from heavy chip board.
   a. Cut the chip board into pieces 9 x 19 (this will give you six looms from a large 38 x 27 sheet of chip board).
   b. Along the 9 inch side tape two layers of masking or book binding tape. Reinforce the corners also. See Fig. 20 and 21.
   c. Using #3 size straight pins, pushed in along the the taped edge every half inch or closer.
   d. Warp with heavy string, jute or yarn. Bend the cardboard so that there is a bow in it before you begin to warp and then keep the bow by keeping the warp tight until it is finished and tied. See Figure 22.

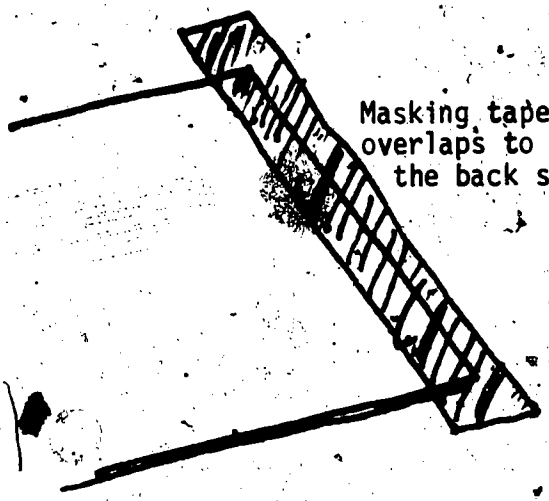


Fig. 20

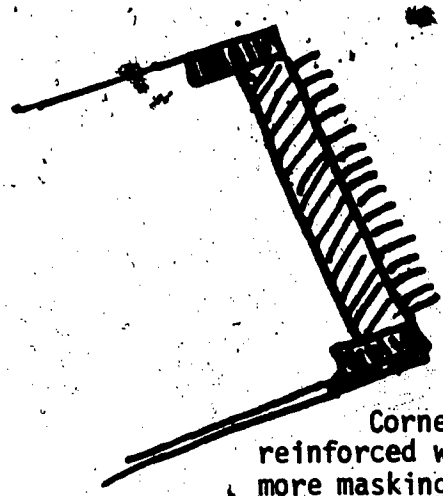


Fig. 21

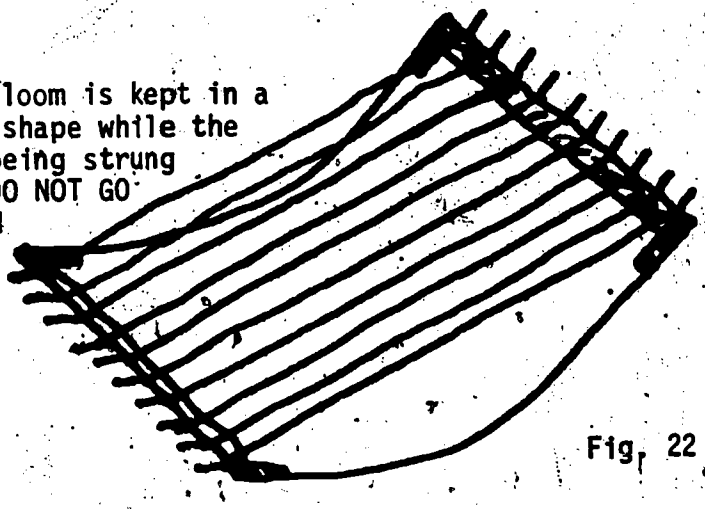


Fig. 22

EVALUATIVE ACTIVITIES:

1. Display the hangings, weavings, etc. Discuss as before. Enjoy!
2. Review the uses of grass. How many kinds do they remember?
3. What constitutes a grass?
4. What were some of the problems that they had in weaving?
5. What materials were the easiest to weave?
6. Show film "At Your Finger Tips". Discuss possibilities of projects that could be done with grasses.

ADDITIONAL ACTIVITIES:

1. Cut some clay into sections so that each child has enough to make a small slab or tile. Make sure it is irregular in shape.
   a. Punch a hole in the top for hanging purposes.
   b. Press the grasses into the central area of the slab in a pleasing arrangement. Press fairly deep, at least the thickness of the grass itself.
   c. Set the slab of clay aside to dry for two weeks and fire.
   d. Paint the bisque piece with a contrasting glaze color.
   e. Carefully wipe the surface of the glazed piece with a sponge, leaving glaze only in the depressions of the design. Be careful at this point not to over saturate the sponge with water. Keep rinsing out the sponge to get a crisp design color.

2. Make a watercolor wash. Pass out equipment: paper, watercolors, brushes, water pans. Keep the large utility sponges at the sink, or by a large pan of water if sink is not available.
   a. Students take turns dampening their papers, with the large sponges.
   b. Place your wet paper in front of you in a vertical manner.
   c. With a loaded brush of say magenta, or bright blue, etc. start painting the paper at the bottom going from side to side, working your way slowly up the paper. DO NOT SCRUB!
   d. Periodically dip brush into plain water to lighten the charge of color you have been working with.
   e. Eventually you will have a water color wash of one color that begins very strong at the bottom and gradually fades almost to no color at the top of the paper.
   f. Make several of these. Try different colors. But keep the wash limited to one or two colors. If two colors are used be sure to blend them well.
   g. Set the wash aside to dry in readiness for the next step.
   h. Go for a walk and collect as many different types of grasses as you can find. Bring them back to the classroom (each child should have several examples).
   i. Pour the India ink into containers (margarine tubs work very well for this - use one to every four students.) Be ready to clean up any spills immediately as this type of ink stains quickly and permanently. Pass out the pen with holders.
   j. Have the students examine the grasses and arrange them or spread them out on their desks. Sometimes it is nice to have a small jar to hold them. (baby food jar)
   k. Begin to draw the grasses in the center of the water wash. (Note the dark end of the paper can be either the top or bottom now.) Remind the students to start three or four inches in from the side and not to extend their drawings any farther than three or four inches from the top and bottom of the paper. If directions are followed the students will end up with what is called a "vignette" type of drawing. When matted they become very handsome, and all are usually successful. Let them experiment!

*** REMINDERS FOR LESSON 6 ***

1. Collect fir cones at least one per student. (SHOULD HAVE BEEN DONE TWO WEEKS AGO in order that they are thoroughly dried out.)

2. Acquire some felt scraps or buy some.

3. Make sure all other supplies are on hand.

LESSON 6

CONCEPT: Seeds travel and can be used artistically to man's advantage.
Seeds are a universal food supply for man and some animals.

MATERIALS:
Fir cones, at least one per child
Felt scraps, several colors, pieces should be at least 3 x 4 inches
for the owl cover, eyes and beak could be from tiny scraps
Embroidery thread or thin yarn, many colors
Large needle, one per student
Filmstrips: "How Seeds are Scattered" and "What Do Seeds Do?"
String
Glue
Pins
Scissors
Owl patterns
Colored toothpicks

PROCEDURE:

1. Pose the questions:
   What do you know about seeds?
   What do seeds do?
   Who uses seeds?
   How are they useful?
   How do seeds travel from place to place?

2. Discuss each of the above questions.

3. Show the filmstrips: "What do Seeds Do?"
   "How Seeds are Scattered"

4. Discuss the filmstrips.

5. Pass out art materials. The following owls make good Christmas tree ornaments. Or if you feel really ambitious make a mobile out of several owls.
   a. Ditto off the patterns for the hoods of the cones, etc. so each child has one. (the day before)
   b. Cut out the patterns and pin to pieces of felt scraps. Remember that the front and back should be cut out of the same color felt piece.
   c. Sew the front and back together with an overhand or whip stitch. Make sure that the stitches aren't over an eighth of an inch apart. Go all the way around, starting at point A. See Figure 23 and 24.

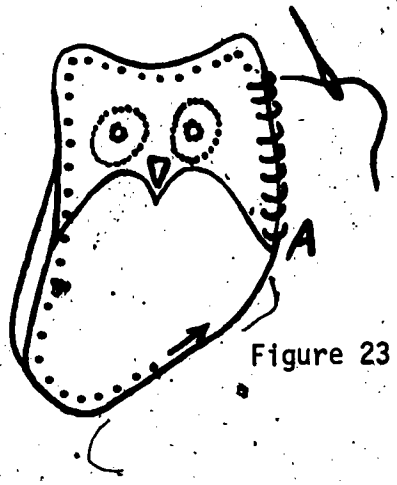


Figure 23

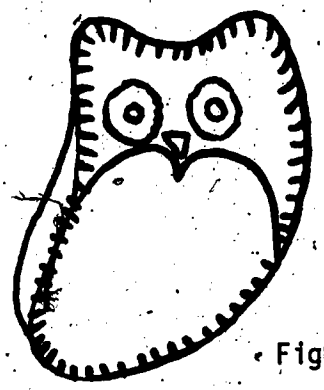


Figure 24

d. After the back and front have been stitched, use a needle threaded with string. Tie a double knot in the string. Pass the needle inside of the owl head, up through the center of the head, but not between the two pieces of material, catch the edge of the back piece. Put a dot of glue on the knot before pulling the string in place. This will be the string that you use for hanging. See Fig. 25.
e. Cut out and glue on the eyes and beak.
f. Slip the finished owl garmet over the fir cone.
g. Break off the ends of colored toothpick. Slip it into place with a dab of glue on the lower front of cone. See Fig. 26.

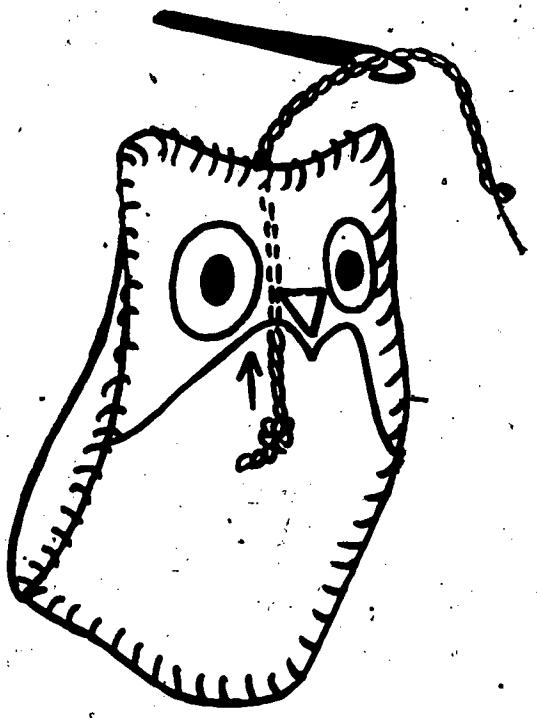


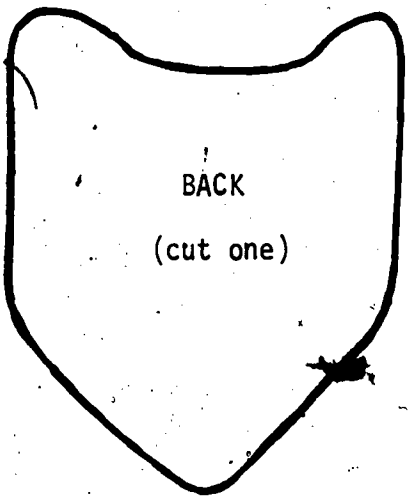
Fig. 25

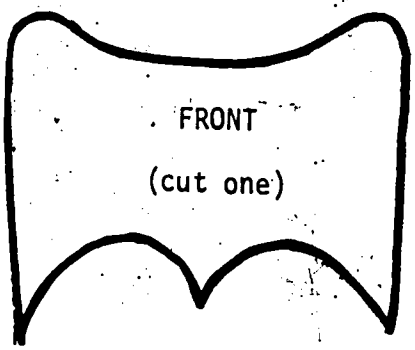
Fig. 26

EVALUATIVE ACTIVITIES:

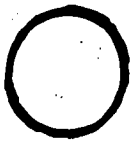
1. Who are some seed gatherers? Discuss.
2. Pin up owls and admire. Possible display them on a large twiggy limb mounted on the bulletin board.

DITTO PATTERNS





BEAK (cut one)



WHITE OF EYE (cut two)

BLACK CENTER OF EYE (cut two)

BIBLIOGRAPHY

* "Rubbings" - Andrew, Laye - 1968 - Watson-Guptill

"The Vital Process: Photosynthesis" - Baker, Jeffrey, 1969, Doubleday & Co., Inc. N.Y. - medium

"Down Came the Leaves" - Bancroft, Henrietta, 1961, Thomas Y. Crowell Co., N.Y. - easy

() "The Art of Drawing, Trees" - Brooks, Walter, 1966, Grumbacher, New York

"A Tree is a Plant" - Bulla, Clyde Robert, 1960, Thomas Y. Crowell Co., N.Y. 2nd - easy

"The First Book of Trees" - Cormack, M. B., 1951, Franklin Watts, Inc., N.Y. 4th grade medium

"What is a Plant" - Darby, Gene, 1960, Benefic Press, Chicago - easy

"What is a Tree" - Darby, Gene, 1962, Benefic Press, Chicago 2nd - easy

"Winter Buds" - Davis, Betty J., 1973, Lothrop, Lee & Shapard Co., N.Y. - hard

* "First Book of Plants" - Dickinson, Alice, 1953, Franklin Watts, Inc., N.Y. - medium

"Plants That Feed Us" - Fenton and Kitchen, 1956, Van Rees Press, N.Y. - hard

"Plants That Feed the World" - Frisch, Rose E., 1967, D. VanNostrand Co., Inc. - hard

"Mushrooms & Molds" - Froman, Robert, 1972, Thomas Y. Crowell Co., N.Y. - easy

"What We Find When We Look at Molds" - Gray, William D., 1970, McGraw-Hill Book Co., N.Y. - medium

* "How and Why Wonder Book of Ecology" - Grossman, Mary & Shelly, 1971, Grosset and Dunlap, N.Y.

* "This is a Leaf" - Hutchins, Ross E., 1962, Dodd, Mead & Co., N.Y.

"This is a Tree" - Hutchins, Ross E., 1964, Dodd, Mead & Co., N.Y. - hard

"Mushrooms Fern and Mosses" - Jensen, Amy E., 1965, Grosset & Dunlap Pub., N.Y. - hard

"How a Seed Grows" - Jordan, Helene J., 1960, Thomas Y. Crowell Co., N.Y. - easy

"The House That Nature Built" - Kalina, Sigmund, 1972, Lothrop, Lee & Shephard Co., N.Y. - medium

"Our Tiny Servants: Molds & Yeasts" - Kohn, Bernice, 1962, Prentice-Hall, Inc. Englewood Cliffs, N.J. - medium

"I Found a Leaf" - Lerner, Sharon, 1964, Lerner Pub. Co., Minneapolis, Minn. - Easy

"Bacteria" - Lietz, Gerald S., 1964, Garrard Pub. Co., Champaign, Ill. - easy

* "Green is for Growing" - Lubell, Winifred & Cecil, 1964, Rand McNally & Co., N.Y. - medium

"The True Book of Plants" - Miner, Irene S., 1953, Childrens Press, Chicago - easy

"True Book of Plants We Know" - Miner, Irene S., 1953, Chicago, Childrens Press - easy

"Wonder World of Strange Plants" - Neurath, Marie, 1956, Lothrop, Lee & Shepard, N.Y. - easy

"Seeds and Seed Travel" - Parker, Bertha Morris, 1960, Row, Peterson & Co., N.Y. - hard

"Trees" - Parker, Bertha, 1960, Row, Peterson & Co., N.Y. - medium

() "Art and Environment" An art resource for teachers - Pattemore, Arnel W., 1974, Van Nostrand Reinhold

"What Tree is it?" - Pistorius, Anna, 1955, Follett Pub. Co., N.Y. - medium

"True Book of Trees" - Podendorf, Illa, 1954, Children's Press, N.Y. - easy

* "Dyes from Plants" - Robertson, Seonaid, 1973, Van Nostrand Reinhold

"Maple Tree - Selsam, Millicent, 1968, William Morrow & Co., N.Y. - easy

"Plants That Heal" - Selsam, Millicent, 1959, William Morrow & Co., N.Y. - hard

* "Plants that Move" - Selsam, Millicent E., 1962 - Will Morrow Co., N.Y.

"Play With Plants" - Selsam, Millicent, 1949, William Morrow So., N.Y. - medium

* "Play With Seeds" - Selsam, Millicent, 1957, William Morrow & Co., N.Y. - hard

"Seeds and More Seeds" - Selsam, Millicent E., 1959, Harper & Brothers, N.Y. - easy

"The Wonders of Seeds" - Stefferud, Alfred, 1956, Harcort, Brace & Co., N.Y. - hard

"Bits That Grow Big" - Webber, Irma E., 1949, E.M. Hale & Co., EauClaire, Wisconsin medium

"Travelers All-The Story of How Plants Go Places" - Webber, Irma E., 1944, William R. Scott, Inc. N.Y. - easy

* "Making Things" - the handbook of creative discovery, Wiseman, Ann, 1973, Little Brown & Co., Boston, Mass.

* "Plants" - Zim, Herbert S., 1947, Harcourt, Brace & World, Inc., N.Y.

* "What's Inside of Plants?" - Zim, Herbert S., 1952, William Morrow & Co., N.Y. 2nd easy and hard (two texts)

NOTE: Many of the books on this list can be found in your school library, however those marked * will be found in the professional library and those marked () are available from the art office.

For your convenience the films used in this ELE are listed on this tear out sheet. Simply add the dates required and mail to the Instructional Material Center, ERAC.

Project ECOLogy

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	Soil is for Growing			
	Plant Needs			
	True Book of Plant Experiments			
	Parts of a Plant			
	Plants We Use			
	How Seeds Sprout			
	Textures in Nature			
	Patterns in Nature			
	How Seeds are Scattered			

FILMS	DATE WANTED	NOT WANTED AFTER	DATE CONFIRMED
What Do Seeds Do?			
At Your Finger Tips			
Discovering Texture			
Discovering Patterns			